

A Simple Approach with Fabrication of Hollow Bulb Palatal Obturator in Maxillofacial Defect – A Case Report

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Abstract

Tooth loss along with maxillofacial defects causes an esthetic, functional, and psychological impairment that may reduce the patient's self-esteem and quality of life. Palatal defects due to trauma or surgery of benign or malignant tumor cause speech imparity, orotracheal communication, and difficulties in deglutition and mastication. To overcome these difficulties and to reduce the weight of the obturator, hollow obturator is fabricated and described in this case report. Thus, it improves speech and masticatory function.

Keywords: Hemi maxillectomy, Hollow bulb, Maxillofacial defect, Obturator.

INTRODUCTION

Maxillofacial defects resulting from neoplasm or surgical intervention causes nasal intonation of speech, fluid leakage into nasal cavity, and impaired masticatory function and ultimately reduce the patient's self-esteem and quality of life.^[1] In such case, surgery to close the defect is not recommended due to the extent of the deformity, where access is limited, and vascularization, as well as in some instances where recurrence of the lesion is suspected depending on the intensity of the tumor.^[2] Ambroise Paré first gave the opinion on the artificial closure of palatal defects in the 1500s. Fry used post-surgical prosthodontic impressions to close surgical defects in 1927.^[3] Obturators provide a stable matrix and establish oronasal seal after surgery, reducing the psychological impact of surgery, and allowing effective speech after surgery while also improving esthetics.^[4,5] The extension of obturator into the defect depends on the configuration of the defect, character of its lining tissue, and functional requirements for retention, stability, and support, of the prosthesis.^[4] Light-weighted hollow bulb obturator is preferred to enables cleaning, prevent fluid accumulation, and maximum extension.^[5] The prognosis of the treatment depends on the size of the defect, durability of the material with uniform wall thickness,^[6] amount of remaining bony structures, and ability of the patient to adapt to the prosthesis. To figure out the technique well, this article describes a case report of a patient who had undergone partial maxillectomy due to malignant carcinoma rehabilitated with a hollow bulb obturator prosthesis.

CASE REPORT

A 72-year-old female patient (Figure 1a) presented to the Department of Prosthodontics and Crown-Bridge for the prosthetic rehabilitation of post maxillectomy defect resulting from tumor of the left maxilla 6 months back (Figure 1b). The patient complained of nasal regurgitation of fluids, difficulty in speech, and mastication. She had worn surgical obturator. On intraoral examination, it was seen that the left side of the upper arch was partially dentate. The lateral wall of the defect was lined by skin graft (Figure 1c). Hence, the undercut present in the lateral wall of the defect was planned to be utilized for retention of the prosthesis. It was decided to fabricate a hollow bulb obturator for the patient because the hollow bulb reduced the weight of the prosthesis. In lower arch, a Class-I RPD was fabricated.

Procedure

The primary impression of the defect was made using alginate. The defect was blocked with a gauze piece lubricated with petroleum jelly before impression making. The primary cast was poured with type IV dental stone. The final impression

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Figure 1: (a) Pre-operative facial profile of patient. (b) Intraoral image view of defect area. (c) Intraoral occlusal view with maxillofacial defect

was made with heavy body (putty) and light body addition silicone elastomer and the master cast was poured with type IV dental stone. Jaw relation was recorded and teeth arrangement was done and wax try-in was carried out. After try-in, waxed up obturator was processed conventionally with flasking, dewaxing, and packing using heat polymerizing acrylic resin. After fabrication of open hollow obturator, a separate wax lid was fabricated and checked for fit in to the hollow area properly. Then, the wax lid was acrylized and attached to the obturator by self-cure acrylic resin to create closed hollow bulb obturator (Figure 2a and b). Finishing and polishing of the obturator prosthesis were done (Figure 2c). Denture insertion was done into the patient's mouth (Figure 3a) after intraoral adjustments. The patient was happy and satisfied with his improved speech, function, and esthetics (Figure 3b). The patient was given instructions regarding maintenance of the prosthesis and periodic follow-up.

DISCUSSION

Hemi maxillectomy is often the treatment of choice for malignant neoplasm including squamous cell carcinoma accounting for 80% of tumors. This article described a simple, easy, and less time-consuming technique to fabricate a closed hollow obturator. Several techniques have been advocated for making obturators hollow and light weighted. Habib and Driscoll suggested a technique whereby a part of the bulb similar to a lid is removed and then joined back to the prosthesis after the bulb has been hollowed. In our study, grinding out the interior of the bulb after processing classic technique used and then separate lid was joined for hollowing an obturator. Nidiffer and Shipmon^[7] described about several advantages of construction hollow bulb obturator like reduces the weight of the prosthesis, increased retention and thus improved physiologic functions, improved patient comfort and self-confidence, good regeneration of tissues, and reduced chances of excessive atrophy and physiologic changes in the muscle balance. These techniques simply fabricate closed sealing of

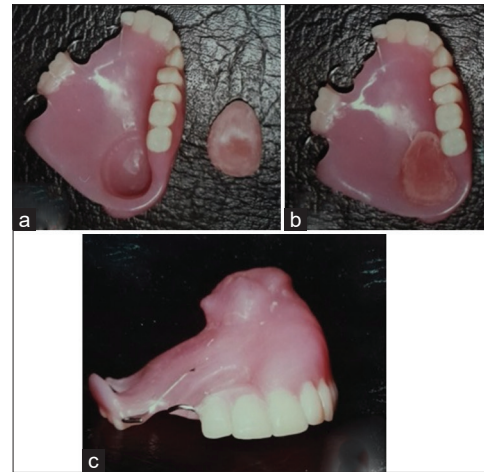


Figure 2: (a) Open hollow bulb obturator with out LID. (b) Closed hollow bulb obturator prosthesis. (c) Intaglio surface hollow bulb obturator



Figure 3: (a) Intraoral view in occlusion. (b) Patient's profile after insertion of obturator

the opening or joining of the bulb and lid part is done by auto polymerizing resin.^[8] The sealed area presents as a site for preventing fluid and food accumulation, reducing airway space, and allow for maximum extension than open hollow bulb obturator.^[9] Few authors decline the idea of sealing because that might cause water leakage, enhance bacterial growth, discoloration, and increased weight of the prosthesis. But, ease of fabrication while controlling the thickness of the hollow portion, minimizing laboratory and clinical appointment time are major advantages of this technique.^[10]

CONCLUSION

Adequate retention, stability, and support are the great challenges in rehabilitating a hemi maxillectomy patient in fabrication of an obturator. Hollow bulb obturator fabricated with maximum extension and proper design rehabilitates the patient by improving masticatory efficiency, increasing the speech clarity, reduce psychological stress, and improvement of quality of life. However, thorough follow-up requires to achieve success in treatment outcome.

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